

SWBAT: analyze series and parallel circuits

Jan 4-7:20 AM

Welcome!!!

H. Leslie Grebe

SECA Physics
Monday 10 March 2014

- * Pick up:
 - slip of paper (for later)
 - white board, eraser, crayon

Centering



Opening Questions:

R

What are the units for resistance?

\pm for current? A

\checkmark for voltage? \checkmark



0.4ms

Sep 7-7:04 AM



Mystery Resistor - extra credit

- You may work alone or with at most one other person of your choosing.
- Get a "Mystery Resistor" labeled with a letter from Leslie
- Use the same equipment that our teams used in class. Take measurements that will allow you to calculate the resistance (in Ohms) of your resistor.
- You may work when there is spare time in class or arrange other time with Leslie.

Due by 3:00 Friday 3/28

Jan 19-7:12 AM

Series and Parallel Lab:

Practice

Catchy Physics Phrases:

Series circuits have one path.



Parallel circuits have more than one path.



Mar 21-7:21 AM

A visit to "Circuitopia"

People: **CHARGE**

Moving / speed of people: **CURRENT**

13 secs

"Gotta catch my flight!":
"PUSH" **VOLTAGE**

Passport checker: **RESISTANCE**

29 secs

Speed? **SLOWED DOWN**

Plane → passport checker → visa checker → plane

Speed? **SLOWER STILL**

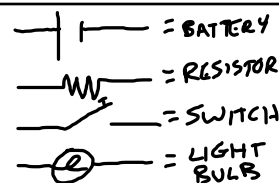
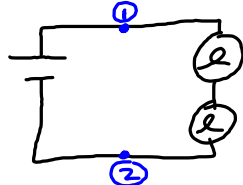
Break! **ALL STOPS**

2 Passport checkers: **CHOICE → PARALLEL**

Speed? **FASTER THAN SERIES**
FASTER THAN 1 (CHECKER) } **BUT SLOWER THAN 1**

Mar 5-8:35 AM

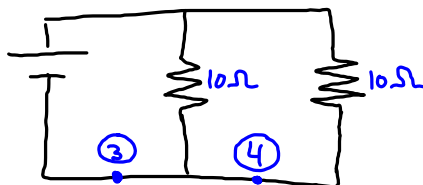
Circuit Puzzles: Predict, explain, observe



WILL THE CURRENT BE THE SAME AT ① & ②?

Observation: 0.45 A on both spots

Explanation: One path, one wire, all electrons flowing same speed



WILL THE CURRENT BE THE SAME AT ③ & ④?


Observation: 1.80 A at (3) and 0.90 A at (4)

Explanation: All moving electrons need to use the wires closest to the battery. But the electrons don't need to go through both resistors! So some through each path.

Mar 23-7:45 AM

Concept sheet: 6 rows total

Bike

Concept	Meaning	Symbol	Units	Analogy
CHARGE	PROPERTY OF PROTONS & ELECTRONS THAT CAUSES ATTRACTION & REPULSION	q	COULOMBS C	
VOLTAGE = ELECTRIC POTENTIAL	POTENTIAL BASED ON POSITION IN AN ELECTRIC FIELD "PUSH"	V	VOLTS V $V = \frac{1J}{1C}$	- PERSON PEDALING ⇒ THE PUSH
CURRENT	THE FLOW OF ELECTRIC CHARGE $= \frac{\text{CHARGE}}{\text{TIME}}$	I $I = \frac{q}{t}$	AMPERE A $1A = \frac{1C}{1s}$	- WHEEL CHAINS MOVING
RESISTANCE	OPPOSITION OF CURRENT "AGAINST THE FLOW"	R	OHMS Ω	BRAKES
OHM'S LAW	VOLTAGE = CURRENT TIMES RESISTANCE	$V = I \cdot R$	$V = I \cdot \Omega$	HOW HARD YOU PEDAL? BRAKE AFFECTS SPEED

$$\frac{q}{I \cdot t}$$

$$\frac{V}{I \cdot R}$$

Feb 23-7:34 AM

Daily 3 Questions

CP homework - Cafeteria

- * Every day except test/project days
- * 3 Questions on the topics of the day
- * Main source of daily points
- * I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

You can't get your points if you don't have your NAME!!!

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

1. True or False: Current is the same everywhere in a SERIES circuit.

2. What happens to a series circuit when the passport checker goes on break?

ALL STOPS

3. Is the flow through the circuit (or airport) better when the resistors are in series or in parallel? (Which is faster?)

Feb 18-6:59 AM